

Art Unit: 2821

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1. A method for setting an optimum value of a write parameter for use in an optical recording apparatus for writing information on an optical recording medium (1) by means of a radiation beam (5),

the method comprising a first step (41) of writing a series of test patterns on the recording medium, each pattern being written with a different value of a write power level (P) of the radiation beam,

a second step (42) of reading the patterns so as to form corresponding read signal portions (18, 19), and

a third step (43) of deriving a value of a read parameter from each read signal portion, characterized in that the method also comprises a fourth step (44) of curve-fitting a function defining a relation between the read parameter and the write power level (P) to the values of the read parameter and of the write power level (P),

and a fifth step (45) of setting an optimum value of the write parameter in dependence on a property of the curve-fitted function.

2. A method as claimed in claim 1, characterized in that in the fourth step (44) a function represented by a substantially straight line (22) is curve-fitted to the values of the read parameter and of the write power level (P).

3. A method as claimed in claim 1, wherein the read parameter is a modulation (M) of the amplitude of a read signal derived from information recorded on the recording medium.

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4. A method as claimed in claim 3, characterized in that the curve-fitted function (22) is of the form $P-M = \alpha(P-\beta)$,

wherein α and β have values resulting from the curve-fitting,

and in that the optimum value of the write parameter is set to be substantially equal to the value of β .

5. A method as claimed in claim 2, characterized in that the curve-fitting of the straight line in the fourth step is carried out in a predetermined fit range (28) of write power levels.

6. A method as claimed in claim 5, characterized in that the predetermined fit range of write power levels is in-between P_{end} times ω_1 and P_{end} times ω_2 ,

where P_{end} is a value read from an area on the recording medium comprising control information indicative of the recording process and where ω_1 and ω_2 are predetermined values.

7. A method as claimed in claim 5, characterized in that the method further comprises a step of curve-fitting a provisional straight line, and in that the predetermined fit range of write power levels is in-between P_{fit} times ω_1 and P_{fit} times ω_2 ,

where P_{fit} is a value derived from the provisional curve-fitted straight line and where ω_1 and ω_2 are predetermined values.

8. A method as claimed in claim 6, characterized in that ω_1 has a value substantially equal to 0.85 and ω_2 has a value substantially equal to 1.15.

9. A method as claimed in claim 5, characterized in that the method also comprises a step of curve-fitting at least a second straight line in at least a second predetermined fit range of write power levels, and in that in the fifth step the optimum value of the write parameter is set in dependence on a property of each of the curve-fitted straight lines.

10. A method for setting an optimum value (P_{opt}) of a write power level (P), of a radiation beam, which method is intended for use in an optical recording apparatus for writing information on an optical recording medium (1) by the radiation beam (5) having the write power level (P), using a method as claimed in any of the claims 4 to 9 for setting an optimum value of a write parameter, characterized in that the optimum value (P_{opt}) of the write power level (P) is set to be equal to the optimum value of the write parameter times a multiplication constant (κ).

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11. A method as claimed in claim 10, characterized in that the multiplication constant (κ) is read from an area (32) on the recording medium containing control information indicative of a recording process whereby information can be recorded on said recording medium.

12. An optical recording apparatus for recording information on an optical recording medium (1), comprising a radiation source (4) for emitting a radiation beam (5) having a controllable value of a write power level (P) for recording information on the recording medium,

-) a control unit (12) for recording a series of test patterns, each pattern being recorded with a different value of the write power level,
- a read unit (90) for reading the patterns and forming corresponding read signal portions (18, 19), and
- first means (10) for deriving a value of a read parameter from each read signal portion,
-) characterized in that the apparatus also comprises second means (101) for curve-fitting a function defining a relation between the read parameter and the write power level (P) to the values of the read parameter and of the write power level (P), and
- third means (102) for setting an optimum value of a write parameter in dependence on a property of the curve-fitted function.

13. An apparatus as claimed in claim 12, characterized in that the second means (101) are arranged for curve-fitting a function represented by a substantially straight line (22) to the values of the read parameter and of the write power level (P).

14. An apparatus as claimed in claim 13, characterized in that the read parameter derived by the first means (10) is a modulation (M) of the amplitude of a read signal derived from information recorded on the recording medium, and in that the curve-fitted function (22) represented by a substantially straight line is of the form $P \cdot M = \alpha \cdot (P - \beta)$, wherein α and β have values resulting from the curve-fitting.

15. An apparatus as claimed in claim 14, characterized in that the third means (102) are arranged for setting the optimum value of the write parameter so as to be substantially equal to the value of β .

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16. An apparatus as claimed in claim 13, characterized in that the second means (101) for curve-fitting a function are arranged for setting a predetermined fit range (28) of power levels.

17. An apparatus as claimed in claim 16 wherein, the read unit (90) is operative to read a value (P_{int}) indicative of the fit range from an area on the recording medium comprising control information indicative of the recording process, characterized in that the second means (101) are arranged for setting the predetermined fit range of power levels between P_{int} times ω_1 and P_{int} times ω_2 , where ω_1 and ω_2 are predetermined values.

18. An apparatus as claimed in claim 16, characterized in that the apparatus comprises fourth means for curve-fitting a provisional straight line to the values of the read parameter and of the write power level (P) and fifth means for setting a value P_{fit} in dependence on a property of the curve-fitted provisional straight line, and in that the second means (101) are arranged for setting the predetermined fit range of power levels between P_{fit} times ω_1 and P_{fit} times ω_2 , where ω_1 and ω_2 are predetermined values.

19. An apparatus as claimed in claim 16, characterized in that the apparatus comprises fourth means for curve-fitting a second straight line in a second predetermined fit range of power levels, and in that the third means (102) are arranged for setting an optimum value of the write parameter in dependence on a property of each of the curve-fitted straight lines.

20. An apparatus as claimed in claim 14, characterized in that the apparatus comprises setting means for setting an optimum value (P_{opt}) of the write power level (P) in dependence on the optimum value of the write parameter.

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21. An apparatus as claimed in claim 20, the read unit (90) is operative to read a value of a multiplication constant (κ) from an area (32) on the recording medium containing control information indicative of a recording process whereby information can be recorded on said recording medium, characterized in that the setting means are arranged for setting an

optimum value (P_{opt}) of the write power level (P) by multiplying the optimum value of a write parameter by the multiplication constant (κ).

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22. An optical recording medium (1) for recording information by irradiating the recording medium by means of a radiation beam (5), the recording medium comprising an area (32) containing control information indicative of a recording process whereby information can be recorded on said recording medium, the control information comprising values of recording parameters for the recording process,

characterized in that the control information comprises a value of a multiplication constant (κ) for use in the method as claimed in claim 5.

23. An optical recording medium (1) for recording information by irradiating the recording medium by means of a radiation beam (5), the recording medium comprising an area (32) containing control information indicative of a recording process whereby information can be recorded on said recording medium, the control information comprising values of recording parameters for the recording process,

characterized in that the control information comprises a value indicative of the fit range (P_{ind}) for use in the method as claimed in claim 6.

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